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CARE OF THE MOUTH AND TEETH

BY

HARVEY J. BURKHART, D.D.S.

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BY

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Rochester, New York

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CARE OF THE MOUTH AND TEETH

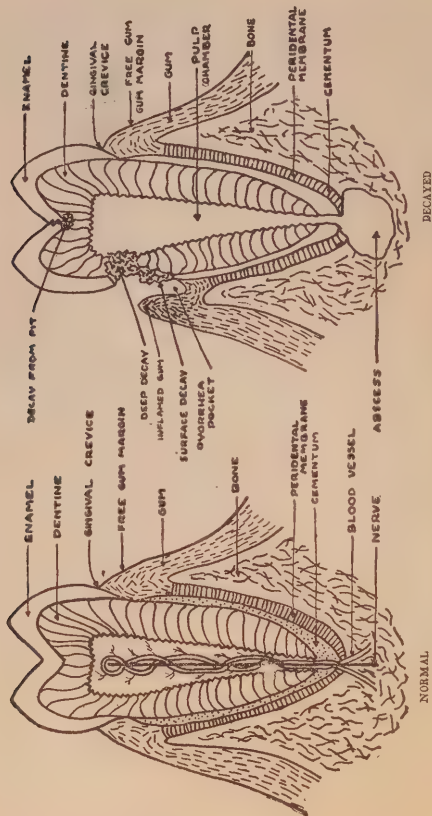
CHAPTER I

ORAL HYGIENE

ORAL HYGIENE, or health-care of the mouth, includes care of the teeth, tongue, gums, and all the other soft tissues of the mouth, and is of first importance in conserving the health of the whole body. When asked to define Oral Hygiene, Sir William Osler, the great clinician, replied that it is one of the outstanding public health matters, the promotion of which will do more to prevent disease and promote the health of the human race than any other single activity in the whole field of modern sanitation.

It is only within a very few years that any considerable number of people have appreciated the value of clean mouths and good teeth. The services of the dentist were sought for relief from acute toothache, for the repairing of broken teeth, or for artificial substitutes. Not many people visited a dentist because of a lively realization that the mouth was a breeding place for many different germs of disease, and therefore should be kept in a hygienic condition. A woful ignorance exists, even to-day, of the far-reaching effect upon the general health of pathological conditions about the mouth. Medical examiners for life insurance companies, industrial establishments, etc., pay particular attention to unusual conditions in every part of the body except the mouth. Small boils and pimples are usually scrutinized with care to determine if there is any condition that might make the applicant a poor risk. There might be a dozen foci of infection in the

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A TOOTH AND ITS SUPPORTING STRUCTURES

mouth, pouring their poison germs into the blood stream and the stomach, but little, if any, attention is paid to these.

The lack of recognition of dental lesions is not confined to the laity. The medical profession, itself, has been slow to realize the importance of proper mouth conditions. There has often been an antagonism between physicians and dentists, and the patient has been made to suffer on account of lack of reasonable cooperation. Happily, however, these conditions are fast passing away.

Many causes are responsible for unhealthy mouths, and probably it would be a waste of time to give advice about the care of the mouth and teeth without calling attention to these causes. They will be pointed out in subsequent chapters, but for the present it may be enough to say that neglect of the teeth is the most general cause of dental trouble, and indirectly of many other kinds of ill health. The benefits to be derived by the whole body from rational methods of dental attention, and especially from the maintenance of a clean and healthy mouth, are considerations which merit the support and encouragement of health workers everywhere.

THE NEGLECTED MOUTH A BREEDING-PLACE FOR GERMS

It is a well established fact that the mouth, if neglected, becomes a breeding-place for disease germs, and that these may cause serious disorders of the whole system. Abscesses about the mouth, diseased tonsils, abscessed and decayed teeth are sufficient causes to create disturbances in various parts of the body. Heart disease, rheumatism, disorders of the liver and kidneys; eye, ear and nose trouble; anemia and many other diseases are frequently the result of germs that have had their origin in the

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mouth. It is quite reasonable to imagine that ulcers of the stomach, appendicitis and other abdominal troubles may be the result of disease germs propagated in the mouth. With these facts well established by scientific investigation and clinical observation, leading medical and dental practitioners are advocating prompt and early attention to any disorders that may occur about the mouth and teeth.

FIRST AID FROM THE TOOTH-BRUSH

The first requisite for reducing the causes of decay, of course, is the daily use of a tooth-brush to keep the teeth clean. The bristles of the brush should not be too soft; they should be stiff enough to do their cleansing work. But care should be taken not to pull the brush violently across the teeth, thus possibly injuring the gums. Brush the teeth lengthwise, from the gums toward the crowns, as much as possible, taking care to get the bristles into the crevices between them, both on the outside and on the inside surfaces.

TOOTH POWDERS AND PASTES

There are many good tooth-powders, pastes and mouth-washes on sale, but none of them possess elements that will destroy the germ of tooth-decay. They are useful, nevertheless, as cleansing agencies, because an agreeable and pleasant preparation will induce more frequent brushing of the teeth.

In the selection of a tooth-paste or powder, an effort should be made to obtain one which will not abrade the enamel of the teeth, or leave a sticky substance in which bacteria may lodge or cause irritation of the gums. Of all the preparations for tooth-cleansing purposes, a paste is probably most desirable, because the tubes in which they are put

up are more convenient to handle, and there is an opportunity on the part of the tooth-paste manufacturers to put out a more attractive preparation both as to appearance and taste.

Many dentists object to paste because they fear some preparations might contain substances which would aid in the propagation of bacteria. While some of these preparations might make a good culture medium for the development of disease-germs, there is little to be feared from this source, because a thorough rinsing of the mouth, after tooth-brushing, washes practically all the bacteria away. Many dentists recommend tooth-powder instead of paste, because they regard it as a better substance for the removal of stain, dental plaques, and the film that is usually found covering the teeth, especially if these have been neglected for some time. If a powder is used it should be free from grit or material that would not be soluble in water or the fluids of the mouth. Some tooth-paste and powder manufacturers claim for their products that they neutralize the acids usually responsible for dental decay.

OLD-FASHIONED REMEDIES

There are a number of so-called old-fashioned remedies for cleaning the teeth that are not harmful, and yet contain cleansing properties. Table salt is one of the most useful of these, as it has a stimulating effect upon the gums. Willow charcoal, when used nearly dry on the brush, once or twice a week, is useful for brightening and polishing the teeth. Perborate of sodium, flavored with wintergreen, makes an agreeable dentifrice and is said to have antiseptic properties. A preparation consisting of magnesium peroxide 6 parts, sodium perborate 3 parts and pulverized soap 1 part is suggested by Dr. Head because

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it contains no ingredients which will scratch the enamel.

Many people, especially children, are troubled with a green stain, particularly about the necks of the teeth. The use of 1 part of peroxide to 2 or 3 parts of water will assist materially in removing the stain. Much has been said about the benefit to be derived from the use of alkaline or acid mouth-washes. Naturally the kind to be used depends upon the secretions of the mouth of the individual. It is recognized that most of the disease-germs of the mouth breed in an acid medium. When it is known that the secretions of the mouth are unusually acid, the use of table salt, bicarbonate of soda or milk of magnesia will produce satisfactory results. So far as possible, mouth cleansing preparations which contain acids should be avoided, because they will cause sensitiveness and irritation about the necks of the teeth. In the selection of any preparation for cleansing the mouth and teeth, it will be advantageous first to consult a dentist, who will be able to give helpful advice.

EXTRACTION WITH THE USE OF LOCAL ANESTHETIC

The extraction of hopelessly decayed teeth by the use of a local anesthetic and other modern methods removes much of the dread of this operation. And here I wish to urge again that every source of infection about the mouth be promptly removed. Any mouth is much better off without teeth than with those which are diseased and a menace to the general health. Teeth should be kept in good condition to masticate the food properly, as most foods have to be prepared in the mouth for digestion by a thorough chewing and mixing with saliva. Much of the nutritional value of food is lost by improper assimilation.

lation. Without proper assimilation there cannot be good health.

REMOVING DISEASED ROOTS AND TEETH

A surprising and wonderful change occurs in a large majority of cases when aching, broken-down and diseased teeth are removed. Backward children and those difficult to manage have frequently been placed on an equality with normal children by the correction of mouth defects. A large number of cases of juvenile delinquency, irritableness and incorrigibility have been cured when the cause has been removed. Abscesses and other dental diseases frequently impair the health and vitality of the child, and on account of this weakened state there is interference with the intellectual and physical development. A child so handicapped is also more liable to contract contagious diseases and is frequently not able to keep up with school work. In many instances children who are extremely nervous, with irritable dispositions, and who are difficult to manage in school, are greatly relieved and improved by the removal of nerve irritation caused by infection in the mouth from aching and decayed teeth.

There has been a noticeable improvement, of late years, as regards attendance at school, because of the correction of dental troubles. There has also been observed a wonderful improvement in discipline. It is easy to see that a child who has been awake a part of the night, suffering from toothache or bad mouth conditions, is not likely to have a sweet disposition in school the next day; neither can such a child do its work in a satisfactory manner. Principals and teachers are very cordial in their praise of dental corrective work, if for no other reason than that it has resulted in improving the dispositions of the children.

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NOT NECESSARY TO EXTRACT EVERY ABSCESSSED TOOTH

Not all teeth that become sore and abscessed need to be extracted. In case a child's tooth is so affected, the pus may often be drained by puncturing the cavity, after which the tooth may be treated and made to serve a useful purpose until it is finally pushed out by the on-coming permanent tooth. It is the part of wisdom to retain every tooth as long as it is useful and not liable to cause damage. However, no chances should be taken if there is an abscess or infection of any kind that may not be speedily cured, because of the liability that the individual may be constitutionally affected. Owing to a lack of resistance, due to a lowered vitality, the person, and particularly a child, is liable, if a focus of infection is permitted to exist, to suffer from disturbances of a very serious nature in other parts of the body.

THE DENTAL HYGIENIST

Probably the greatest service a dentist can render is that of instructing his patients as to the value and necessity of preventive work in maintaining a healthy mouth and teeth. In recent years, valuable assistance has come to the dentist in this department of his profession, through the agency of young women who are now trained to do tooth-cleaning work, not only in dental offices, but in schools and public institutions. This is a new vocation for women and is regarded as of the highest importance in health educational work. These young women are taught to do what is known as prophylactic work—that is, the removal of tartar and the cleaning and polishing of the teeth—under the supervision of a graduate dentist. They are an invaluable adjunct to the nation's health activities, not only because of

their mechanical skill, but also because of their function of instructing parents, principals, teachers and children in nutrition and proper attention to the hygiene of the mouth. Probably the most important service which these young women render is in the doing of prophylactic work in the schools and in instructing the children, not only in the care that should be given in order to maintain a healthy mouth, but also with reference to personal and general hygiene. Their work is much appreciated wherever they have been employed, and there is a great demand for their services.

CHAPTER II

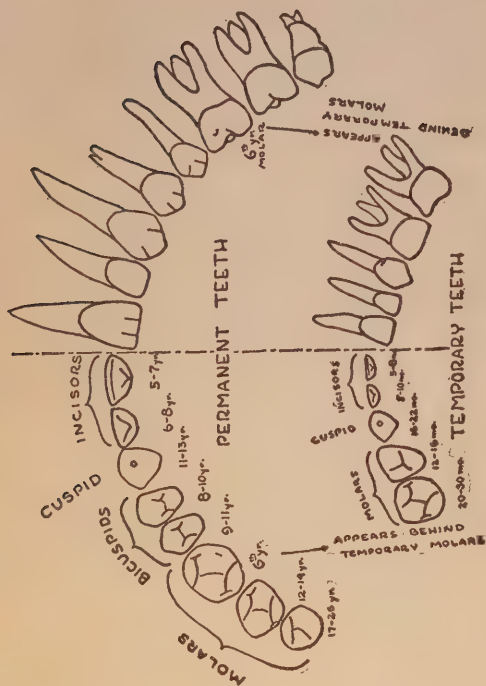
TOOTH-CARE IN INFANCY AND CHILDHOOD

WHILE the adult may obtain relief and comfort by the correction of bad mouth and teeth conditions, the greatest and most permanent good is likely to come from the education of the children, from infancy, to the benefits of a healthy mouth and sound teeth. It is, therefore, most essential that educational work should be principally devoted to the enlightenment of parents, children, school teachers and health workers.

THE EXPECTANT MOTHER

In the education of the expectant mother will be found the greatest aid in the prevention of tooth decay. During the period when the buds of the teeth are being developed, between the fifth and eighth months of pregnancy, and from that time until the birth of the child, it is of first importance for the mother to pay strict attention to her diet and other habits that may affect the future health of the child. She should be as free as possible from nervous strain or irritation; in other words, her environment should be as pleasant as it is possible to make it. Her diet should consist of vegetables, fruit, milk, graham and whole wheat bread, butter and cream. Meats and other rich foods should be avoided if possible, and if eaten, should be taken in small quantities.

The maintenance of good health during this period is a mighty factor in the development of sound teeth and a healthy body in the child. It is very



AVERAGE TIME OF APPEARANCE OF TEETH

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necessary that the mother's mouth be kept in a healthy condition, free from decayed teeth, unhealthy gums or any kind of infection. She should properly brush her teeth and clean her mouth, and frequently visit her dentist for the removal of tartar and polishing of the teeth. She should also advise freely with her physician and dentist for evidences of malnutrition and disorders of the mouth.

NUTRITION AND CARE OF THE BABY

Nutrition plays a most important part in producing good teeth and preventing dental decay. Practically in every case where children are breast-fed their teeth are much stronger and less liable to decay than those of the bottle-fed baby. Breast milk contains those elements that are of the highest importance, because they combine all the properties necessary for the development of a healthy child. Substitutes for breast milk do not contain the essentials to provide even partial immunity to the infectious diseases. Mothers should nurse their babies from five to seven months whenever possible. Every precaution should be taken by the mother, during the nursing period, to see to it that no infection is carried to the child's mouth by carelessness or neglect, as the mucous lining is very tender and susceptible to disease. Infections brought to the mouth are liable to affect the lining of the stomach and cause general systemic disturbances.

BRUSHING THE BABY'S TEETH

From the time the first tooth is cut until the last one is erupted, they should be thoroughly cleansed after meals, and especially just before going to bed. In order to obtain the confidence and cooperation of the child during this period, much patience and gentle means will be necessary on the mother's part.

As the teeth become more fully developed, a soft brush should be used. Various methods for the brushing of the teeth have been proposed, but any method is better than none at all. Probably the best plan is to use the brush with a rolling or rotary motion, using both the right and left hand. By this method the bristles will be worked between the teeth and assist in the removal of accumulations of food and other things. Not only the teeth, but the gums as well, should receive a thorough and vigorous brushing for the purpose of stimulating the circulation and producing hard, healthy gums.

Children should early be taught to value the use of floss silk after the toothbrush has been used, but care should be exercised to avoid irritating the gums. Much harm may result if the gums are made to bleed through the too vigorous use of dental floss. Recession of the gums may occur, and pockets form around the roots of the teeth, which later might produce pyorrhea. It is the parent's duty to see that the child keeps its teeth clean.

MOUTH-BREATHING

Many of the children's illnesses are due to mouth-breathing caused by stoppage of the nose by adenoids or of the throat by enlarged and diseased tonsils. These obstructions are a menace to the health of the child, because they are constantly pouring poison into the blood stream and thus weakening and retarding physical development. Mouth-breathing also causes a narrowing of the jaw, so that there is not the required room for the second teeth. Much harm results from narrow jaws and crooked teeth. There is great trouble in keeping irregular teeth clean and preventing decay. Facial deformities and lack of room for the second set are often the result of a

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narrow jaw, and many children with unattractive faces could have been improved by early treatment.

SPECIAL CARE DURING SICKNESS

It is well known that during the illnesses of childhood the secretions in the mouth become unhealthy, and at such times, particularly, there is much need for proper mouth toilet. On account of a lowered bodily resistance and vitality, the rapid breaking down of teeth frequently occurs, so that the regular and thorough cleansing of the mouth and teeth is of first importance; a dirty mouth is a fertile field for the development of germs of tooth decay, and of other bacteria which will cause general systemic trouble.

DISTURBANCES DURING TEETHING

Teeth do not always erupt on schedule time, but this need not be a cause of worry to the parents. Very often considerable functional disturbance occurs while teeth are being erupted. Babies and young children may have stomach and intestinal disturbances. There may be considerable inflammation of the gums, and sometimes sacs, filled with fluid, form over the ends of the teeth. The child is usually very irritable when this occurs. The inflammation should be removed as quickly as possible, either by lancing the gums or by giving the child some hard substance upon which to chew, which will have a tendency to break the gum over the tooth, thereby relieving the pressure and making it easier for the tooth to force its way through. It is especially important at this time to keep the mouth as clean and sterile as possible, otherwise infection may be carried into the stomach and digestive tract, which will result in more disturbance.

DANGER OF DECAYED BABY TEETH

As the double teeth of the first set are beginning to come through, between the eighteenth and twenty-fourth month, particular attention should be given to cleansing and brushing. At this stage the roughened and fissured tops of the teeth are more liable to decay, because they prove an easy lodging place for food and germs. From the end of the third year until about the sixth, when a child loses its baby teeth, most careful attention should be given and every means employed to keep them free from decay, as these teeth should be retained until the time of the eruption of the permanent teeth. If the baby teeth are lost before the permanent ones come in, a contraction of the jaw is liable to take place, leaving insufficient room for the larger permanent teeth.

As is well known, decay in children's teeth proceeds very rapidly, and it is therefore important that fillings and other reparative work should be promptly done. It is the practise of many forward-looking dentists, at the present time, to protect the tops of the teeth by filling the fissures of the double teeth with cement or treating them with nitrate of silver, in order to prevent later trouble.

HOW TO TREAT ABSCESSSES

Decay in baby teeth should receive immediate attention, because if it is neglected the teeth break down rapidly; the nerve of each infected tooth becomes inflamed and an abscess forms at the root. If prompt relief is not given, the pus breaks through the cheek and leaves a permanent scar or depression in the face. Nurses and parents should be cautioned against applying a hot water bottle, poultice or heat in any form to the outside of the face in such cases. A cold pack or compress should be applied outside of the mouth, and every effort made to keep the pus

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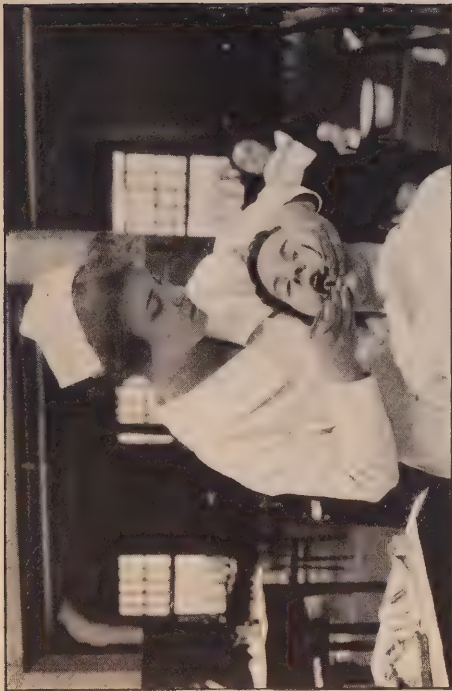
from breaking through the skin. Gumboils, abscesses or any kind of diseased roots of teeth should not be permitted to remain in the mouth. Their prompt removal is essential to the physical wellbeing of the child and is also a protection to the first tender beginnings of the permanent teeth.

If rapid decay of the first set of teeth occurs, the family dentist and physician should be consulted, so that the cause may be discovered and measures promptly taken to cure malnutrition or any other thing that may be responsible for this disturbance.

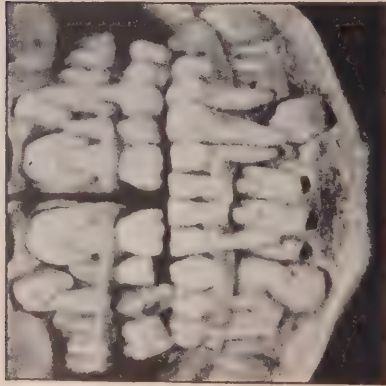
COMING OF THE PERMANENT TEETH

Essential as is the proper care of the temporary teeth, the period from the sixth to the twelfth year is the time when most serious attention should be given to the oral hygiene of the child, as the permanent teeth are then being erupted. The most important tooth in the permanent set is the sixth-year molar, which through ignorance and neglect is often lost earlier than any other. It erupts just back of the last double tooth in the first set, and is frequently mistaken for one of the temporary teeth. The sixth-year molar is the keystone of the arch, and its loss is liable to cause much trouble because of the narrowing of the jaw, which leaves insufficient space for the permanent teeth to come in in regular order. The sixth-year molar also is most important for masticating purposes, as it is larger than any other molar.

It is now regarded as a wise precaution to take a child to the dentist as soon as the sixth-year molar erupts, and to have the crevices and serrations in the top treated with nitrate of silver or protected with some filling material. It would be well to follow the same practise when the bicuspid and the second permanent molars erupt about the twelfth

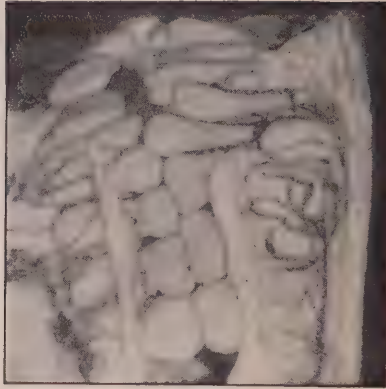


PROPHYLAXIS—A DENTAL HYGIENIST CLEANING TEETH
Photographed in the schools of Rochester, N. Y.



TOOTH ERUPTION—FRONT VIEW

Mouth of a child 5½ years old, showing milk teeth with full set of permanent teeth at their roots.



TOOTH ERUPTION—SIDE VIEW

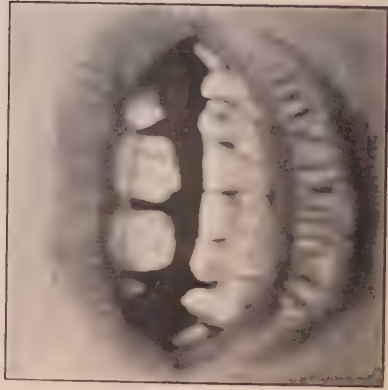
Mouth of a child 6½ years old, showing permanent incisors coming in—also sixth-year molar at left.



NEGLECT

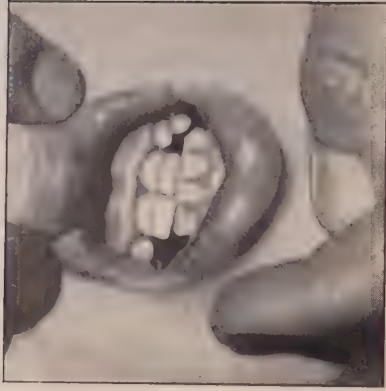


REPAIR



EXTREME ENAMEL DEFECT

This 14-year old patient's nutrition was very poor, but the injury to her teeth was caused chiefly by measles and scarlet fever before she was 5 years old.



LATER VIEW OF SAME TEETH

Note the nearly normal growth of enamel over the portion of the upper teeth nearest the gums, due to natural development after health had become normal.

year. If parents are particular in seeing to it that all cavities are promptly filled, up to the time when the child is sixteen years of age, there will be very little liability of trouble from tooth-decay after that time, unless there should be continued illness or physical breakdown or some other unusual cause.

Cleanliness of the mouth, prompt attention to the filling of teeth, and the correction of other faulty mouth-conditions are not altogether sufficient to insure a sound set of teeth. As has before been indicated, proper nutrition is of the highest value in sound health-building. Too much emphasis cannot be placed upon the necessity for careful attention to the diet of every growing child. Ill-balanced nutrition and a faulty diet may very well be responsible for breakdown later in life.

BETWEEN THE AGES OF FOURTEEN AND SIXTEEN

One of the most important periods in a child's life is from the age of ten to sixteen, and throughout this period the greatest amount of care should be given to the mouth and teeth. In these years there is a maximum liability to accidents that knock out teeth or break off their corners, or that fracture the jaw. This is particularly true of those who are engaged in athletics. Accidents of this kind should receive prompt attention. When front teeth are broken, the dentist should be promptly consulted, so that the life of the tooth may be preserved, and discoloration and the formation of abscesses prevented. As the roots of the teeth may not be fully developed before the age of twelve years, it is not always advisable to make permanent restorations, as extensive operations may cause the death of the pulp and also other complications. Artificial restorations can usually be made with little difficulty as the child becomes more mature.

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FRACTURED AND BROKEN TEETH

When permanent teeth are loosened or knocked out, they must be forced back into the sockets and held there until a dentist can be consulted. The tooth that has been knocked out may be replaced in the socket and wired or connected by a band to adjacent teeth, until such time as it becomes firm again. In most cases the tooth treated in this way will be serviceable for many years.

If by any chance a root should be absorbed by natural processes, it may be replaced with a substitute. Very often a tooth will turn black as the result of a blow or concussion. When this is observed, a dentist should be consulted, so the tooth may be treated before an abscess forms. It is regarded as good practise, when accidents of this nature occur, to have an X-ray picture taken of the jaw, to determine if it has been fractured; in case it has, a suitable splint or appliance should be placed in position before swelling ensues. One of the most valuable adjuncts in a dental office is the X-ray machine, which may be employed to good advantage, not only in making pictures of suspected teeth and of jaw fractures, but also in discovering cavities between the teeth and below the margin of the gum, where it is otherwise difficult to discover them.

CHILDREN'S DENTISTRY

It is not advisable to subject children to long or painful operations in the dentist's chair, particularly at the outset. It should be the endeavor of the dentist and dental hygienist to perform operations painlessly if possible, to give short appointments, and to try in every way to remove doubt or fear from the mind of the child, so as to get his willing cooperation. Any child who receives early education as to the value and benefit to be derived from the maintaining

of a clean mouth and good teeth, will be very likely to continue in adult life the practises which have been beneficial and helpful.

TIME OF THE ERUPTION OF TEETH

There is much ignorance on the part of parents as to the time teeth erupt, and very often valuable teeth are lost because of this ignorance. As is well known, children grow two sets of teeth. There are twenty in the milk or so-called deciduous set and thirty-two in the permanent set. The milk teeth usually appear as follows: The central incisors from the sixth to the eighth month; the lateral incisors from the seventh to the ninth month; the first molar from the twelfth to the sixteenth month; the canine or eye-teeth from the fourteenth to the twentieth month, and the second molars from the twentieth to the thirtieth month. The lower teeth usually erupt before those of the upper set.

The permanent teeth usually come in in the following order: the first molars about the sixth year. They erupt back of the last deciduous molar. The sixth-year molar, twelfth-year molar and wisdom teeth do not take the place of deciduous or milk teeth. The central incisors of the permanent set, both upper and lower, come in between the sixth and seventh years. The lateral incisors come in between the seventh and eighth year, the first bicuspid between the ninth and tenth, and the second bicuspid between the tenth and eleventh year. The eye or canine teeth erupt from the eleventh to the thirteenth year, the second or twelfth-year molar from the twelfth to the thirteenth year, and the third molars or wisdom teeth from the eighteenth to the twenty-fifth year.

CHAPTER III

TRIUMPHS OF MODERN DENTISTRY AND ORAL SURGERY

THERE is probably no profession that has made greater strides during the last fifty years, in advanced requirements for pre-educational and professional study, than has dentistry. The present-day dentist is quite as highly educated and prepared to carry on his work as any other professional man. His skill has been developed to a very high degree, and especially is this true in the making of various kinds of porcelain crowns, bridges and plates for the restoration of broken-down teeth, and to take the places of those that are missing. Many substitutes can be made that will be satisfactory in appearance, comfortable and useful. It is always desirable to retain as many healthy teeth as possible, since they may be doubly useful as a means for the attachment of clasps to hold partial plates and removable bridges. While fixed bridge-work is most comfortable and useful in its proper place, it is often more advisable to use substitutes that may be removed for cleansing purposes. But perhaps the greatest advance of all is that which has recently been made in the scientific straightening of crooked teeth.

ORTHODONTIA—STRAIGHTENING THE TEETH

Malformation of the jaws and irregular teeth present a difficult problem. The trouble may be due to heredity, to mouth-breathing, thumb-sucking, diseased tonsils, premature loss of the sixth-year molar,

or some like cause. With the aid of modern dental appliances, it is now possible to correct these malformations, including overshoot and undershot jaws, so that the face may be made normal in appearance and the teeth straight and serviceable. While there is a difference of opinion among dentists as to the best time for straightening the teeth, the period between the ages of twelve and fourteen is usually regarded as best, when children are more easily controlled than at a later period. However, an earlier time is in many cases productive of better permanent results. There is probably no branch of dentistry where a more wonderful service is rendered than in the regulation of crooked teeth.

The child with crooked teeth is far less handsome in appearance than he would be if his teeth were straight, but that is not a full statement of his trouble. In the first place, the child loses the efficiency of the first function of teeth, that of mastication, which has a direct and important bearing on digestion, and, of course, on general health. Usually this condition is accompanied by faulty articulation—an impediment of the speech. The crowding of the teeth also may prevent the arch of the mouth's roof from attaining its proper spread and the jaws from developing to their proper width, with the result that undue pressure is exerted on important nerve-centers, and that insufficient breathing space is provided. Both of these conditions are fraught with serious consequences. Many other serious handicaps are incidental to these, not the least among them being the fact that crowded, crooked and decayed teeth cannot be healthy, and that the dental and medical professions have not yet ceased to find serious physical disorders whose seat may be traced to defective teeth.

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Just how orthodontia accomplishes its work is, of course, too technical a subject to be discussed here. It is sufficient to say that marvelous instruments and devices have been designed for working wonders within the mouth. The period of treatment extends over a long time, usually from two to five years, depending upon the age of the patient and the seriousness of his condition. Since better results are obtained—and obtained more easily—when the treatment is begun in early life, attempts should be made to reach the children as early as possible. Even children six or seven years old are brought in for this work, and professional effort is expended upon their baby teeth, for it has been found that when the first teeth are made to grow properly, the teeth which succeed them are likely to grow properly, with ample room for their development.

THE RESULTS OFTEN WONDERFUL

The photographs reproduced with this chapter offer adequate illustration of what orthodontia has accomplished for its young patients. Children frequently are found who have protruding upper teeth or protruding lower jaws which not only seriously impair their appearance but also have a marked effect upon their health and mentality. By slow degrees, after these children begin making regular calls on the dentist, their teeth return to the proper position, their lips and jaws become normal, and finally the patients show such improvement that sometimes it is difficult to believe they are the same persons.

When a child is brought for orthodontic treatment, a plaster cast is made to show the condition of his teeth. This cast, which is preserved as a record, is referred to frequently by the operator to guide him in the use of appliances and for purposes

of comparison. During the course of treatment, other casts are taken at intervals. And finally, when the retaining appliances, which have been kept in the child's mouth to guide his teeth into position, have been removed, another plaster cast is taken. A comparison of these "before and after" casts show results which are not easily believable. These casts, however, are mere inanimate indications of the great change that has taken place in the child. This change is apparent even to the casual observer of the child's features; but still more truly wonderful, the parents and teachers often report, is the improvement that follows in his physical condition and general health.

HARE-LIP AND CLEFT PALATE

There is probably no physical deformity more distressing to parents than hare-lip and cleft palate. If a child with a hare-lip is operated upon during his first few months, remarkable results may be obtained, with little or no scar remaining on the lip, such as is likely to follow when the operation is performed later. Frequently cleft palate occurs without hare-lip, and many parents, through neglect and lack of observation, are not aware of the defect until about the time the child should begin to talk. In any case it is an affliction painful alike to the child and to the parents, for the child cannot talk as normal children do. Where early operations for cleft palate have not been performed, relief may be obtained through mechanical appliances. These appliances provide the mouth with an artificial roof and palate, which closes the opening. By giving strict attention to articulation and enunciation, the child can then improve his speech until it becomes fairly normal.

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DEAD OR DISEASED PULPS OR NERVES

Teeth with dead or diseased pulps or nerves are the cause of many obscure troubles that may be cured by prompt treatment or extraction. When pulps in the teeth die it is usually due to neglect or to a blow which destroys the circulation at the end of the root. Of late there has been wholesale extraction of teeth that were not the cause of physical disturbance, and that should have been saved. It has been the practise of physicians to send patients to X-ray photographers who are not dentists; upon these photographers they have depended for an interpretation of the picture, with the result that in many cases the patient lost serviceable teeth and the physician and photographer were correspondingly discredited.

All dead teeth are not a menace to health and do not cause systemic disturbances, and the needless extraction of still-serviceable teeth needed for proper mastication and the maintenance of facial appearance should be discouraged. The professional photographer, who is not a physician or a dentist, should not be the final judge in the interpretation of X-ray photographs of teeth. Darkened areas or shadows in the pictures do not always indicate a diseased condition. Reliable dentists keep accurate records that will be found of much value in determining the course of procedure. There should always be cooperation and a good understanding between the physician and dentist; otherwise, many valuable teeth will be sacrificed and much harm result. The extraction of diseased teeth often cures disturbances, but that is not a sufficient reason for their removal until after a careful diagnosis and examination of the history of the case is made.



BEFORE



AFTER

ORTHODONTIA—REMAKING FACES



BEFORE

ORTHO DONTIA—REMAKING FACES



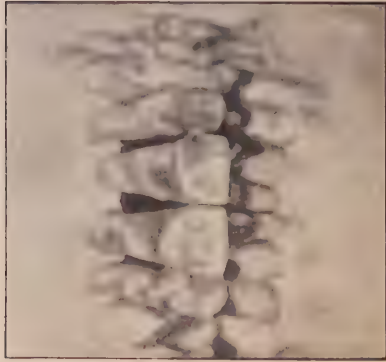
AFTER



OVERSHOT JAW BEFORE TREATMENT



OVERSHOT JAW AFTER TREATMENT



EFFECTS OF PYORRHEA

Note the absorption and recession of the gums after long neglect.



EFFECTS OF ALVEOLAR ABSCESS

Where the diseased condition has resulted in bone destruction.

INSANE PEOPLE RELIEVED BY DENTAL ATTENTION

There are many well authenticated cases of the complete restoration of people suffering from insanity and from various nervous disorders, merely by relieving them of the nerve pressure from unerupted and impacted teeth. It is also well known that many cures are effected, particularly in rheumatism and neuritis, by removing sources of infection about the mouth and teeth.

There are many cases with correlative conditions which interfere with proper dental development, but which are not within the strict scope of dentistry, such as cleft palate, hare-lip, and most notably, defective nasal respiration caused by enlarged tonsils and adenoids. If satisfactory results are to be obtained from the dental point of view, particularly as regards orthodontia or tooth-straightening, it is of paramount importance that the nose, throat and mouth be put in as normal a functioning condition as possible.

ENLARGED TONSILS AND GLANDS

An astonishing number of children are found to have hypertrophied tonsils and adenoids to such a degree as to cut down nasal respiration to a point that very markedly interferes with the normal development of the jaws, thus producing a narrowing of the upper arch and a marked disturbance of normal tooth-eruption. Many children have diseased tonsils, which are not strictly obstructive, but which are detrimental to the general health. These cases are not confined to children of families of moderate means, but are quite as prevalent in families of the rich. Modern oral surgery can now give relief to all such sufferers.

A surprisingly large number of children with

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abnormal tonsils and adenoids show evidence of disease and deformity. Discharging ears, enlarged glands of the neck and chronic heart disease have been frequent occurrences among these children.

Many parents are indifferent and ignorant as to the injurious effect of glandular growth in the throat, and the importance of correction as early in the life of the child as possible. It is most important that every child be given a fair chance to develop normally, both physically and mentally. The economic side also is important and should not be overlooked, as the item of caring for the backward child and the repeater, due to loss of time on account of ailments caused by mouth and throat troubles, results in an enormous money loss for schooling.

MOUTH OPERATIONS NOT ORDINARILY DANGEROUS

Until quite recently, due to a lack of educational work among parents, many children have been permitted to suffer from mouth and throat conditions because of the dread of operations, and also through the fear of unsatisfactory or fatal results. Happily, at the present time, much of this dread has been removed because of the safeguards thrown around the doing of the various operations. At the same time parents have come to realize the value of the work and the improvement in the physical and mental conditions of the children after such operations.

It is a well-known fact that the tonsillectomized child enjoys considerable relief from the common complaints of childhood—sore throat, head colds, mouth breathing, infections in head and nose, discharging ears, swollen glands—all of which are less often present after the operation. It has been noted that the surgically treated child has had less heart disease, chorea and rheumatism. Nutritionally, the operated child has a considerable advantage.

From the foregoing it should not be inferred that there is any disposition to recommend the removal of all tonsils. Tonsillectomy is not a panacea and should not be undertaken until after a general physical examination and a careful study of the history of the case.

BRIDGE-WORK

Where bridges are permanently attached, in many cases, food may lodge and cause inflammation of the gums and an unsanitary condition. While artificial substitutes are of very great service, every effort should be made to retain the natural teeth in a healthy condition, as no substitute yet devised can take their places. If, however, through accident or disease, or other causes, it becomes necessary to remove the natural teeth, little time should be lost in obtaining substitutes, both for the purpose of providing effective means of masticating the food, and also for improving the personal appearance of the individual.

ARTIFICIAL TEETH

There are many and various kinds of full and partial substitutes for natural teeth. They are made of silver, gold, rubber and various alloys. Probably 90 per cent. of all artificial plates are made of rubber, as the cost is within the reach of people of moderate means. Such plates are very satisfactory substitutes, but they require more care and attention in brushing to keep them in a sanitary condition, as rubber is a vegetable substance and absorbs the secretions of the mouth. Plates made of metal or porcelain are, in most cases, more comfortable to wear and less difficult to keep clean. Partial plates require much more attention to keep them clean, and they are more liable to cause irritation of the gums, especially

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around the necks of the teeth. Ill-fitting and loose plates are not only unsatisfactory to the wearer, but in many cases annoying and dangerous.

GOLD CROWNS

With the present-day skill and knowledge of the dentist, there is absolutely no excuse for the placing of gold caps on front teeth, as they are usually unsightly and in many cases unsanitary, and there is no good reason to justify the disfigurement of an otherwise good-looking mouth by the use of gold in large quantities.

ADVERTISING DENTISTS

Dentists who proclaim their alleged skill in the public prints, or who advertise low prices, should be avoided. In many cases these persons employ cheap, unskilled operators, who may be unlicensed practitioners of dentistry. Skilful, honest, reliable professional men do not need to appeal for patronage by advertising to do unusual or impossible things. A professional man's best recommendation is conscientious, honest service. No dentist or medical man should be employed who is not known to be well educated and skilful in his specialty. It is the height of foolishness to take a risk which is not justified when matters of health are to be considered, by employing those who are not known to be highly qualified in their profession.

CHAPTER IV

PYORRHEA AND OTHER INFECTIONS

AS a person becomes more mature, teeth are liable to be forced apart, leaving pockets where food collects, with the result that inflammation of the gums and lining-membranes of the tooth causes a loosening and loss of these organs. Rigg's Disease or pyorrhea is liable to follow.

There is no definite knowledge, at the present time, as to the cause of pyorrhea, and there is much speculation both as to its causes and as to its proper treatment. Pyorrhea will rarely or never be found in a mouth where strict attention has been given to the cleaning and care of the teeth. Frequently it occurs as a result of malocclusion, that is to say, an improper fitting of the cusps of the teeth, which is liable to produce unusual strain, inflammation and loosening in the sockets.

Medicines are frequently advertised for the cure of pyorrhea, but they are practically worthless. The dentist can, in most cases, with the cooperation of the patient, cure the trouble when taken in time, by the removal of deposits about the neck of the tooth, polishing the roots and restoring normal occlusion. If the teeth have become very much loosened and there is a general weakened physical condition, their prompt removal is desirable, before others become affected. In most cases pyorrhea is a disease of neglect, first because the patient has not used proper methods for keeping the mouth clean, and secondly, because of unskilful dental service.

A vigorous circulation is one of the greatest aids

in combating disease in the mouth and providing resistance against it. Probably the best way of obtaining this is to massage the gums, either with a tooth-brush or by a vigorous rubbing with the index finger. The teeth and gums depend upon the blood supply for their nourishment, so it is essential that this treatment be given with regularity and frequency. Pyorrhea is rarely or never found in the mouths of children, except perhaps at the end of the school period or in cases of extreme neglect.

TARTAR

One of the most frequent causes of mouth trouble, particularly in adults, is an accumulation of tartar. This flinty deposit is precipitated upon the teeth from the fluids of the mouth. There are various kinds of tartar—green, yellow, brown—and sometimes it is nearly the color of the teeth. If any considerable quantities are permitted to remain long, the gums may become spongy and bleed at the slightest irritation. Suppuration may follow and pus will accumulate about the necks of the teeth. This forces the gums away from the necks, causing pyorrhea and frequently necrosis of the bony sockets. Where much tartar is present, the mouth becomes unwholesome and the breath most disagreeable.

Not the least of the troubles resulting from large accumulations of tartar is the inflammation that may be caused in the saliva ducts by deposits inside of them. Large deposits of tartar around the upper molars frequently result in closing the duct of one of the principal salivary glands. The deposits may become infected and severe pain and swelling follow, with systemic symptoms. A cystic tumor under the tongue, known as Ranula, may result from the dilation of the salivary ducts, due to an excessive accumulation of tartar.

The teeth should be kept free from tartar at all times, and in order to accomplish this it is necessary that the dentist be visited at frequent intervals. In some mouths tartar does not accumulate rapidly, and in others tooth-cleaning by a dentist is necessary every month or two in order to keep the gums in a healthy condition.

A distressing inflammation of the mucous lining of the mouth, known as Stomatitis, frequently occurs, not only in children, but also in adults. It yields more readily to treatment than what is known as Trench Mouth, and is not classed as one of the communicable mouth diseases. The use of such an easily procured remedy as lemon juice several times a day usually results in a speedy cure.

THRUSH

Thrush is one of the most disturbing infections that occur in the mouths of babies from birth to four or five months after. It is known to be a parasitic fungus growing on the mucous membrane. Because of the pain and discomfort the baby will not take a sufficient amount of food. There frequently is a serious interference with nutrition, thereby lessening the resistance of the body. Very often the infection is carried into the throat and mucous lining of the esophagus and stomach, causing a general disturbance. In order to bring about a speedy cure, every effort must be made to have nipples, bottles, food, clothing and everything about the baby in as nearly an aseptic condition as possible.

CHEWING PENCILS—CRACKING NUTS

The habit of chewing the ends of pencils or pen-holders, cracking nuts and biting threads is often the cause of weakened, split and broken teeth. The cracking of the enamel and dentine leaves

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openings for the lodgement of germs of tooth-decay and frequently the pulp of the tooth dies as a result of these harmful and injurious habits.

TRENCH MOUTH

School children and those in orphanages and other public institutions are often affected with a disagreeable and uncomfortable disease known as Trench Mouth, which is an inflammation of the gums and the mucous membrane of the mouth, and results in the breaking down of the tissues and many times in the loss of teeth. It is a readily communicable disease. The use of the same drinking cup is frequently the mode by which the disease is spread. Trench mouth yields quickly to treatment, but only after accumulations of tartar and other débris have been removed, and after strict attention has been given to diet and to the improvement of the general health of the child.

CANKERS AND COLD-SORES

One of the most unpleasant mouth conditions comes from cankers and cold-sores. The causes of these are not definitely known, altho faulty digestion is supposed to be one of them. A correction of the diet and the use of a boric acid lotion as a gargle will usually cure these troubles.

BROKEN TEETH AND ROOTS

Irritation caused by the sharp edges of broken roots or teeth, or by appliances used upon the teeth, is frequently the cause of cancer of the lips and tongue. Ragged, broken and roughened teeth should not be permitted to remain, as they are liable to cause serious damage to the mucous membrane of the mouth and tongue. Immediate attention should

be given to any soreness, swelling, tumors or irritation of the lips and mouth, and a dentist or oral surgeon should be promptly consulted.

BLEEDING GUMS

Both young and old people are often troubled with bleeding gums. Usually this is due to neglect, followed by an accumulation of tartar and foreign substances that cause irritation between the teeth and along the necks of the teeth. Prompt removal of the cause is the first step toward cure. If bleeding continues, a mildly astringent preparation will relieve the condition. Children, as well as adults, may also be troubled with patches known as canker-sores about the gums and lips. These are often the result of a derangement of the digestive tract. The sore spots may be relieved by touching them with a mild preparation of chloride of zinc or alum.

BAD BREATH

Many people are greatly distressed because of what is known as a bad breath. This may be due to decayed teeth or diseased tonsils, or to adenoids. A preparation consisting of thymol, glycerin and water may be used to very good advantage, but the most permanent help will be obtained from consulting a dentist or a physician to ascertain the cause of this disagreeable trouble.

CANCER CAUSED BY IRRITATION IN THE MOUTH

There are many incidents on record where cancer has been produced by plates that irritated and cut the mouth for a considerable period of time. The person wearing a substitute, even tho it may apparently be comfortable and satisfactory, should make frequent visits to the dentist, to be certain that

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conditions under the plate and about the teeth are normal. Poor and unsatisfactory dental work is a menace to the health. Badly fitting crowns and bridges, as well as leaky fillings, hasten the breaking down and loss of teeth. There is no poorer investment than bad dentistry, and the monetary loss is the least of the resulting ills.

CHAPTER V

RELATION OF DIET TO DISEASES OF THE TEETH

IN order to produce strong teeth, the diet should consist of simple, wholesome food. Hard foods should be provided, which will require the child to exercise the jaws and muscles, and thereby produce a higher state of development.

Too much sugar is to be avoided. Ordinarily a sufficient amount of sugar is contained in the various foods and fruits to satisfy the demands of the body. Sweets taken in large quantities interfere with digestion and produce an abnormal desire for highly seasoned foods. The giving of candy to young children between meals should be avoided. If any is to be given, it should be immediately after a meal. The three essentials necessary to produce sound, strong, permanent teeth are a clean mouth, plenty of nutritious food, and fresh air.

Within recent years tremendous strides have been made in the field of human and animal nutrition. It has been established beyond all doubt, for instance, that certain hitherto uncontrollable diseases, such as rickets, infantile tetany, xerophthalmia, scurvy, polyneuritis or beri beri and adolescent goitre, are due to specific deficiencies in the diet, and that they can be prevented or cured by correction of these errors. Certain other diseases (*e. g.*, pellagra and pernicious anemia) are probably caused by defects in the diet also, altho the evidence regarding these is not so nearly complete as in the foregoing examples. Furthermore, it has been

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shown that body growth and development are greatly retarded if the protein or mineral content of the diet is inadequate, even when no special disease is produced from such inadequacies.

In addition to these diseases due to deficiencies in the diet, there are still others, which manifest themselves in certain persons when the diet contains substances positively harmful to them but not at all so to the average individual. The best example of this is found in the reactions of persons who have bronchial asthma, hives or eczema when they become sensitive to the proteins of their food. In the case of diabetes, the tolerance for certain food elements is so greatly limited that success in its treatment necessitates the strictest regulation of the diet in accordance with the limit of tolerance of the individual affected. These examples serve to illustrate the growing importance of diet in its relationship to general health.

DIETS THAT CAUSE DEFECTIVE TEETH

The fact that certain races of people are almost free from diseases of the teeth, while other races, living under different conditions, suffer almost universally from them, has long suggested the existence of some relationship between the mode of living and the occurrence of dental diseases. The importance of diet in this connection however, has only recently been understood. While the specific relationships have not as yet been worked out in minute detail, the following facts have frequently been pointed out:

1. That extreme conditions of malnutrition in infants and young children are nearly always accompanied by serious defects in teeth.
2. That prolonged and pronounced deficiencies in the mother's diet during the periods of pregnancy and lacta-

tion are likely to reflect themselves in the form of abnormal dentition in her child.

3. That diets preponderantly carbohydrate in compositions favor the development of dental caries—especially when this is given in the form of sweetmeats, highly milled flour products, etc.

4. That diets containing fairly large amounts of unrefined and hard foods, which require much chewing, are the diets in most common use by people having the best teeth.

REQUIREMENTS OF AN IDEAL DIET

The only diet that can be depended upon to meet all the requirements for normal development and adequate protection of the child's teeth, therefore, is that diet which is complete in every respect. Furthermore, it should be employed through the child's entire life, including the extremely important first months of his existence. If the ideal is to be carried out to its logical conclusion, the expectant mother's diet must likewise be complete, in order that the teeth of her unborn infant may begin their development under the most favorable circumstances. As it is understood to-day, a satisfactory dietary should fulfil the following requirements:

1. It should be suitable for the age of the individual taking it, as regards its consistency, digestability and other values.

2. It should possess a sufficient energy value (measured in calories) for body work, repair and growth.

3. It must contain an adequate amount of protein, a large proportion of which should be from animal sources.

4. It must be uncontaminated by the various food poisons and disease-producing bacteria.

5. It should be well balanced as regards its content of protein, fat and carbohydrate.

6. For children beyond the age of infancy, it should contain relatively large amounts of the hard or "cleansing" foods which necessitate much chewing.

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7. It should contain sufficient amounts of certain mineral salts.

8. It should contain adequate amounts of the various food-accessory substances or vitamins.

Vitamine A, the so-called growth or antixerophthalmic vitamin, occurs most abundantly in butter, cod-liver oil and fresh egg-yolk. Vitamine B, the antineuritic vitamin, is found chiefly in yeast, fresh fruit and vegetables, and in the outer coverings of the cereal grains. Vitamine C, which prevents scurvy, occurs most abundantly in fresh oranges, lemons and tomatoes, and in smaller amounts in other fresh fruits and vegetables and in uncooked milk. Vitamine D, necessary for the prevention of rickets and tetany in infants and young children, is less widely distributed in nature than are the others, but it occurs in considerable amounts in the liver-oils of cod and certain other fish, and in fresh egg-yolks. It is the most important of the vitamins as regards bone growth, and so is probably especially important in the development and protection of the teeth. It has recently been shown to belong to the group of chemical compounds known as the sterols (*e.g.*, ergosterol). It has been found that ergosterol in apparently pure form becomes endowed with the property of curing or preventing rickets after it has been exposed to ultra-violet light for a short time.

SUGGESTIONS FOR PLANNING THE DIETS OF CHILDREN

While any dietary plan will, of course, need to be modified to meet certain individual requirements, depending upon illness or food idiosyncrasies, it has been thought desirable to present the following gen-

eral feeding directions, which may be used as a guide:*

FROM BIRTH TO THE AGE OF SIX MONTHS

The most desirable diet by all odds for this age is human milk from the baby's mother or from some wet nurse who has a perfectly clean bill of health. When this is not available in sufficient amount (18 to 40 ounces daily, depending upon the baby's age and size), a cow's milk formula must be given to supplement or to take the place of the breast milk. The total amount for the day is usually divided into five or six equal portions to be given by bottle at four-hour intervals. Since this requires special adjustment for each individual infant's needs, with alterations from time to time, such feeding should be carried out under the supervision of a child specialist. No matter what the diet, cod-liver oil and orange or tomato juice should be given regularly throughout this period to insure an adequate supply of vitamins.

SIX MONTHS TO FIFTEEN MONTHS OF AGE

The basis of the diet for this period is milk, as during the first six months. At the beginning, thoroughly cooked cereals, such as farina or cream of wheat, are gradually introduced. At eight months of age the infant is given, in addition, an ounce to an ounce and a half of some thoroughly boiled green vegetable expressed through a sieve. Spinach, tender green peas, cauliflower and carrots can be alternated. It is important for the child to receive the water in which the vegetables are cooked as well as the vegetables themselves, because it con-

* Much credit is due Irvine McQuarrie, Ph.D., M.D., of the School of Medicine and Dentistry of the University of Rochester, for assistance rendered in determining the relationship of diet to diseases of the teeth.

tains much of the desired mineral matter. The cereal and vegetables can be mixed with a small amount of boiled milk if taken better in this form. During the last four or five months of the period, toasted bread or zwieback may be given.

By the end of the first year the baby should be practically weaned from the bottle method of feeding, and should be taking food by means of a cup or spoon. It is well to give the food in five feedings to the end of this period. The 10 P.M. feeding may still be given by bottle as a means of convenience, if desired. It is convenient to give the cereal (one tablespoonful at first to five or six tablespoonfuls toward the end of the period) just before the 10 A.M. and the 6 P.M. feedings, and the green vegetable purée just before the 2 P.M. milk feeding. Unless there is some tendency on the part of the baby's parents or their immediate relatives to develop such disorders as asthma, hay-fever, hives or eczema, which are due to a hypersensitiveness to foreign protein substances, one raw egg-yolk may be mixed with the formula in case cow's milk must be substituted for the mother's milk. (The infant is usually weaned from the breast at the age of ten months, an artificial diet gradually being substituted.) Many different cow's milk formulae are in use as substitutes for mother's milk when weaning becomes necessary. For the average well baby, however, some such mixture as the following is usually satisfactory and is given in amounts required by the individual baby:

Whole boiled milk	25 ounces
(Heated from 10 to 15 minutes in double boiler)	
Karo Corn Syrup	1 ounce
Boiled water	3 ounces
Strained lemon juice	1 ounce
Cod-liver oil	3 teaspoonfuls

Before this is mixed, the water and milk should be recooled to prevent destruction of the vitamins of the lemon juice and to prevent curdling of the milk. The lemon juice is first mixed with the water, and this is then mixed with the milk while it is being stirred. From six to eight ounces of such a formula is given at 6 A.M., 10 A.M., 2 P.M., 6 P.M., and 10 P.M. Water should be offered between feedings, especially in summer.

FROM FIFTEEN MONTHS TO TWO YEARS OF AGE

Feeding during this period requires as much care as during the previous periods. Too often carelessness or neglect begins at this age. The diet should consist chiefly of milk, cooked cereals, stale or toasted bread or zwieback, cooked vegetables, cooked fruits, fresh fruit juices, eggs and lean meat. The meat should be well cooked and then scraped. As the consumption of other foods is increased, less milk can be given, but this should not be reduced below the allowance of one and one-half pints daily. Four separate feedings are sufficient for this period. Water should be offered between feedings. The following schedule is usually satisfactory:

- 7 A.M. Milk, 6 to 8 ounces, with zwieback, hard toast or hard bread.
- 9 A.M. One ounce of strained orange juice or two ounces of tomato juice. One teaspoonful of cod-liver oil.
- 11 A.M. 3 to 6 rounded tablespoonfuls of well-cooked thick cereal, with 3 or 4 ounces of milk. One or two pieces of zwieback or a similar amount of hard bread or toast. One poached or soft-boiled egg or two level tablespoonfuls of finely grated cooked meat.

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3 P. M. 3 to 5 level teaspoonfuls of soft-boiled rice or baked potato. A similar amount of some thoroughly cooked green vegetable, such as peas, spinach, beans, asparagus, beets, carrots, or artichokes, put through a sieve. A like amount of apple-sauce, stewed prunes or properly ripened fresh bananas. 4 ounces of milk.

7 P.M. Orange juice, 1 ounce; cod-liver oil, 1 teaspoonful. Cereal, zwieback or toast and milk, as at 11 A.M., without the meat.

A short rest is desirable before and after meals. Variety from day to day, in the choice of vegetables, fruits, breads and meats, should be provided where possible.

DIET FOR CHILDREN FROM TWO TO FIVE YEARS OF AGE

It is during this period, when the child begins to express his likes and dislikes, that special care must be used to avoid voluntary restrictions of diet and harmful dietary habits. Three regular meals are usually sufficient from this time on. Emphasis should be placed upon the need for complete mastication of all food eaten. Cod-liver oil should still be given, especially during the winter months. The schedule should be somewhat as follows:

Breakfast

7:30 to 8:00 A. M.

Any well-cooked cereal, 4 to 8 rounded tablespoonfuls, with 3 or 4 ounces of rich milk and a small amount of sugar. One soft-boiled or poached egg, or two slices of well-cooked bacon, one slice of dry toast or two pieces of zweiback. Milk, 4 to 6 ounces.

10:00 A. M.

Orange or tomato juice, 2 or 3 ounces.
Cod-liver oil, 1 teaspoonful.

Dinner

12:00 to 12:30.

Thick green vegetable purée or soup, 2 to 4 ounces. Egg, soft-boiled or coddled, or scraped meat, 2 or 3 tablespoonfuls. Baked potato, 2 to 4 rounded tablespoonfuls. 2 small slices thinly buttered toast or old bread. Stewed fruit, custard or jello, one-half to one cup. Milk or cocoa made from milk, 4 to 8 ounces.

4:00 P.M.

Milk, 3 to 6 ounces, with graham crackers or zwieback. 1 teaspoonful of cod-liver oil.

Supper

5:30 to 6:00 P. M.

Cereal or boiled rice, bread and butter and milk or cocoa as for breakfast. Small amount, 2 to 4 tablespoonfuls of stewed fruit.

FOR CHILDREN FROM FIVE TO ELEVEN

During this period more of the uncooked green vegetables and fresh fruits are allowed, but the importance of very thorough mastication should be emphasized. Coffee, tea, highly seasoned and fried foods should not be allowed.

Breakfast

7:30 to 8:00 A. M.

Orange, grapefruit or stewed fruit, cereal, cooked alternating with prepared varieties, with light cream or milk. Whole-wheat bread, toasted, with butter, 1 or 2 slices. An egg, soft-boiled or coddled, or bacon, 2 slices. Milk or cocoa made from milk, 1 glass.

10:00 A. M.

Milk, 6 to 8 ounces with crackers.

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Luncheon

12:00 M.

Mixed vegetable or creamed vegetable soup, 6 ounces. Whole-wheat bread or hard white bread, 1 or 2 slices, with butter. Thin slice of cooked, lean meat; beef, lamb, chicken or fish may be given, or an egg or 2 tablespoonfuls of cottage cheese. Cup-custard, junket, boiled rice or similar dessert or stewed fruit. Milk, 6 to 8 ounces.

3:30 to 4:00 P. M.

One small apple, peach or pear or 4 ounces of fruit juice, with a few crackers.

Dinner

5:30 to 6:00 P. M.

Wheat or sweet potato baked or mashed, or boiled rice. Any green vegetable well cooked. Meat, roasted or boiled. Bread, with butter, as for breakfast. Celery, lettuce, cress, radishes, or fresh tomatoes. Dessert as for luncheon or small serving of ice-cream or dry cake. Milk or cocoa as for breakfast. Cod-liver oil, 2 teaspoonfuls, with fruit juice.

DIET FOR CHILDREN OVER ELEVEN YEARS OF AGE

For children over eleven years old the diet should be essentially that of the adult, with the exception that tea, coffee, highly-seasoned and fried foods are not allowed. The child in this period requires almost as much food as the adult. He should be allowed rich pastries, pickles, etc., very sparingly, if at all. Altho allowed a small amount of fresh fruit or vegetables in the middle of the afternoon, the three full meals should be given regularly. It is very important to prevent over-indulgence in candy and like materials.

DIET FOR THE NORMAL EXPECTANT MOTHER

Breakfast

Grapefruit, orange or other fresh fruit.

Bowl of cereal—kind to be varied from day to day, including whole-grain varieties (with cream and sugar).

Toast—2 medium-sized slices with butter.

Egg, 1 or 2, soft-boiled or poached.

Milk or cocoa made with milk, 1 glass.

Luncheon

Bowl of vegetable soup or broth with crackers.

Small serving of cold meat, oyster-stew, shell-fish or cheese.

Bread, 2 or 3 medium-sized slices (whole wheat, corn or other coarse-flour bread) with butter.

Fresh vegetable or fruit salad.

Fruit—Stewed apricots, peaches, prunes, apples or berries, or ice cream or pudding with cake.

Sweet milk or buttermilk, 1 glass.

Dinner

Clear broth—meat or vegetable.

Roast or broiled meat—beef, mutton, pork or baked fish or liver—one full serving.

White potato or sweet potato or rice—full serving.

Cooked spinach, asparagus, green peas, string beans, cauliflower, onions, beets or carrots, celery, lettuce, tomatoes, water-cress, chopped cabbage or other raw vegetables, with dressing if desired—full serving.

Bread and butter—2 or 3 medium-sized slices.

Milk or cocoa—1 glass.

Jello, blanc-mange, apple pie, fruit ice or cake.

Cod-liver oil—one-half tablespoonful daily. Meals should be varied from day to day. Between one and a half and two pints of milk should be taken daily. Alcoholic beverages and highly spiced foods should be avoided.

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